# *How Do Biological Materials Respond to Acids and Bases? Activity*

## Purpose

To study the response of biological materials to acids and bases

## Materials (per person or lab group)

- pH meters (narrow range pH paper can be used)
- 50 ml beakers (flasks, beakers, or large test tubes may be used)
- graduated cylinder
- various homogenates (A typical "recipe" would be to mix 10g of biological material such as potato, celery, mushroom, yeast, liver, or egg white with 100 ml of water and mix well in a blender.)
- pH 7 buffer solution (buffer capsules are easy to use)
- Alka Seltzer solution (1 tablet for 150 ml water, shake to release CO2 )
- 0.1 M NaOH
- 0.1 M HCl

## Procedure

You will measure the changes in pH resulting from adding acid and base to plain tap water, each of the homogenates, the pH 7 buffer solution, and the Alka Seltzer solution. Make sure you record all of your pH measurements in your data charts.

- Pour 25 ml of tap water into the 50 ml beaker. Measure the pH of the solution. Record in Table 1.
- Add 0.1 M HCl one drop at a time, swirling after each drop. After you have added 5 drops, measure the pH again. Record in Table 1.
- Repeat steps 2 until a total of 30 drops have been added.
- Rinse the beaker well and add another 25 ml of solution.
- Follow steps 2 and 3 again, but this time use 0.1 M NaOH and record in Table 2.
- Repeat the whole procedure for the buffer solution, the Alka Seltzer solution and each of the homogenates.

Graph your results. You can put your results for all of the materials on the same graph, using different colors for each material. Use separate graphs for the response to HCl and the response to NaOH. Be sure to write the name of the material at the end of each line.